



### The Role of the Basic Sciences in Medical Education

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Long before the inception of the School of Medicine in 1967, there has been active debate concerning the design of its curriculum. Physicians have reminded us that they remembered little from their first two years of medical school, and that all the physiology and biochemistry they ever use was picked up during their 3rd and 4th years, mostly from their time in internal medicine. Apparently, the most memorable basic science information was the most relevant to clinical practice.

Throughout the 70's and early 80's, questions were being raised, both in Hawaii and on the mainland, as to whether there was something indefinably, but radically wrong with the standard curricula in medical education. There were too few clues as to how the perspectives of the different Basic Science disciplines should be put together to generate those cross-disciplinary understandings which provide the basis for medical practice. Also, there was concern that students were being taught to "perform" medicine but not being taught the skills needed to obtain satisfaction from the professional life on which they were embarking. Effective problem-solving skills and human interaction skills are profoundly important components of the successful physician's life-style. Where were these skills being taught in the medical curricula?

Then, in the late 80's, JABSOM was introduced to a set of ideas which clearly addressed the concerns noted above. The problem-based ("PBL") method provided an interdisciplinary, case-based, basic science curriculum. It was obvious that this approach placed significant emphasis on major skills which were missing from the traditional curriculum—and that it emphasized thought-processes rather than mere memorization of facts.

However, every innovation creates its own problems. It seemed that the establishment of an interdisciplinary curriculum reduced the significance of the traditional disciplinary basic science departments in medical education. No longer was there any specific component of the curriculum for which a given disciplinary department could be held responsible. The Basic Science departments came to feel that they were little more than a source of "warm bodies" for the interdisciplinary tutorial mill, while the skills of charismatic lecturers seemed no longer valued in medical education. Although students often asked for more didactic teaching, those same students seemed surprisingly unwilling to return to a passive listening role. Over time, some basic science faculty came to fear that well prepared primary care physicians were more acceptable as tutors than experienced basic scientists. Were the basic sciences being pushed aside?

What then, is to be the future role of the Basic Sciences in the John A. Burns School of Medicine? Just as critically, who should be making this decision? These questions have reverberated through the school, the entire university and the medical community.

Despite the negative viewpoint expressed above, it must be obvious that we should retain a community of basic biomedical scientists who are active at the cutting edge of their respective fields. Both students and the larger medical community need to have access to content-experts who can ensure that new knowledge spreads from the bench to the hospital bedside and, further to the community clinic. This goal can be achieved, in part, by improving the opportunities for interaction between the basic researchers and both students and active physicians. JABSOM is already exploring ways to achieve appropriate interactive office hours at which medical students meet in small groups with faculty content-experts. In addition, the Kapiolani-based Clinical Research Center, the Pacific Health Research Institute, the Queen Emma Foundation and other similar community organizations are working to both foster research and bridge the gap between basic scientists and clinicians.

To dispel the fears which arise when change of one kind or another seems inevitable, the following details require our careful attention:

First, we must continue to recognize the value of the basic scientists as tutors who can ensure that the molecular, structural and functional issues are pursued by students to an appropriate level. In addition, Basic Science input is needed in the design of the health care problems used in the Problem Based Learning curriculum. Interaction between physicians and basic scientists in the continual revision of the PBL cases is a powerful bridge-building experience. This interactive process is also essential in the creation of the best computer-based, self-instructional system to support our students' education.

Second, we need to remember that basic biomedical research is a vital underpinning for the education of our medical students. Without active research programs in this school we will be unable to provide our students with those research experiences which will teach them to approach new findings in an appropriately critical manner. Medical education may suffer if research is over-emphasized, but it will just as certainly suffer if research is under-emphasized. Our duty is to seek the appropriate balance—and to foster basic/clinical collaborations wherever possible. And, just as our PBL curriculum is fundamentally interdisciplinary, so too is most cutting-edge research. Thus, potential new hires into the basic sciences need to be evaluated as to whether the applicant's expertise will help support medical education and whether his/her research activity will appropriately strengthen and/or enlarge our current research base. In the 1960's and 70's, the needs of the school could be addressed effectively by individual, disciplinary departments. This is no longer true. The rights of the old disciplinary departments need to be reassessed from a broader, more school-wide perspective.

In summary, the Basic Sciences remain a vital part of medical education. However, change is relentless. The former charismatic lecturer becomes an equally charismatic content expert to be sought out by students and faculty alike. The physiologist or biochemist of yesteryear may now be a biophysicist in the Department of Medicine. Anatomists may show up at Surgery Grand Rounds and PhD pharmacologists may make rounds with the Internists. But all this seeming confusion brings a new excitement both to our teaching and to our research. The more we change, the more effectively we retain our mission as basic scientists: to help our students to obtain the basic structural and functional understandings at the molecular, cellular and organismal levels which will allow them to function as effective physicians for the coming age.